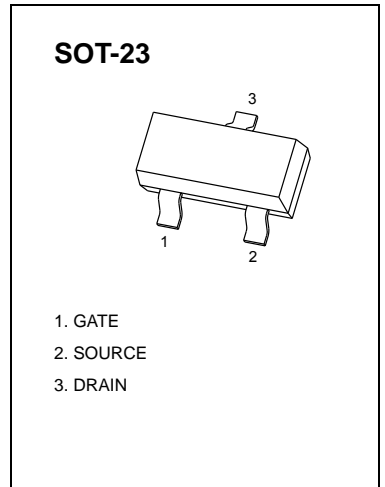


3402 N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	55 mΩ@10V	4A
	70 mΩ@4.5V	
	110mΩ@2.5V	



DESCRIPTION

The 3402 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V.

This device is suitable for use as a load switch or in PWM application.

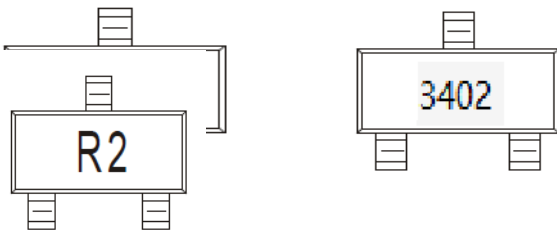
FEATURES

- Lead free product is acquired
- Surface mount package

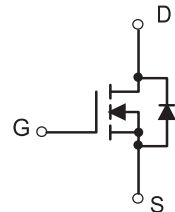
APPLICATION

- Load Switch and in PWM applications

MARKING:



Equivalent Circuit



Maximum ratings ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current (note 1)	I_{DM}	15	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	357	$^{\circ}C/W$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^{\circ}C$

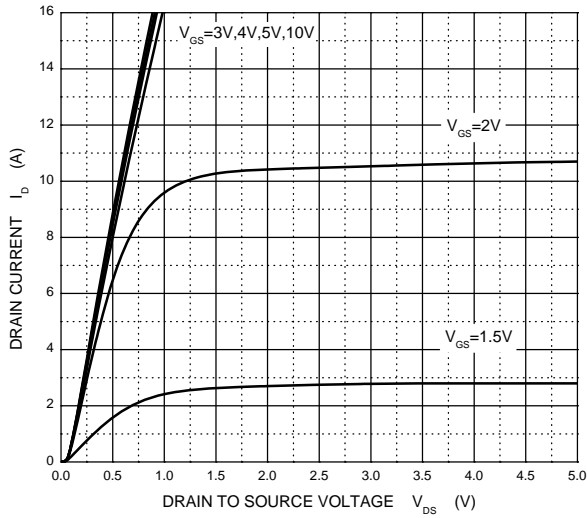
T_a=25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.6	0.85	1.4	V
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} =10V, I _D =4A		33	55	mΩ
		V _{GS} =4.5V, I _D =3A		39	70	mΩ
		V _{GS} =2.5V, I _D =2A		48	110	mΩ
Forward transconductance (note 3)	g _{FS}	V _{DS} =15V, I _D =4A		8		S
Diode forward voltage (note 3)	V _{SD}	I _S =1A, V _{GS} = 0V			1	V
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C _{iSS}	V _{DS} =15V, V _{GS} =0V, f =1MHz		390		pF
Output capacitance	C _{oss}			54.5		pF
Reverse transfer capacitance	C _{rSS}			41		pF
Gate resistance	R _g	V _{DS} =0V, V _{GS} =0V, f =1MHz		3		Ω
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	t _{d(on)}	V _{GS} =10V, V _{DS} =15V, R _L =3.75Ω, R _{GEN} =6Ω		3.3		ns
Turn-on rise time	t _r			1		ns
Turn-off delay time	t _{d(off)}			21.7		ns
Turn-off fall time	t _f			2.1		ns
Total gate charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _D =4A		4.34		nC
Gate-source Charge	Q _{gs}			0.6		nC
Gate-drain Charge	Q _{gd}			1.38		nC
Body diode reverse recovery time	t _r	I _F =4A, di/dt=100A/μs		1.2		ns
Body diode reverse recovery charge	Q _{rr}			6.3		nC

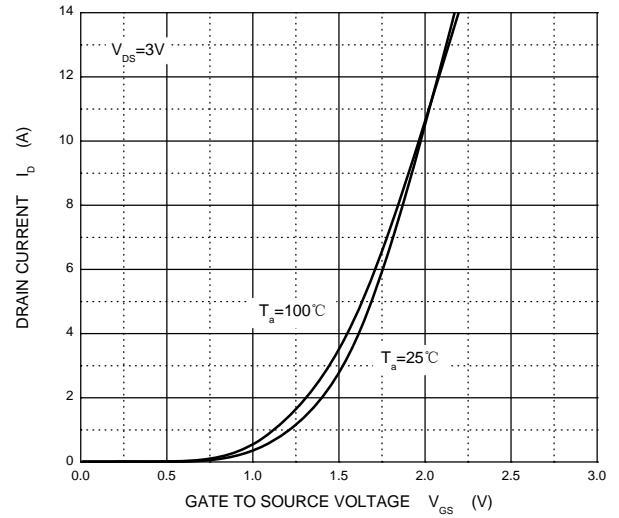
Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t_s≤10s.
3. Pulse Test : Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producing.

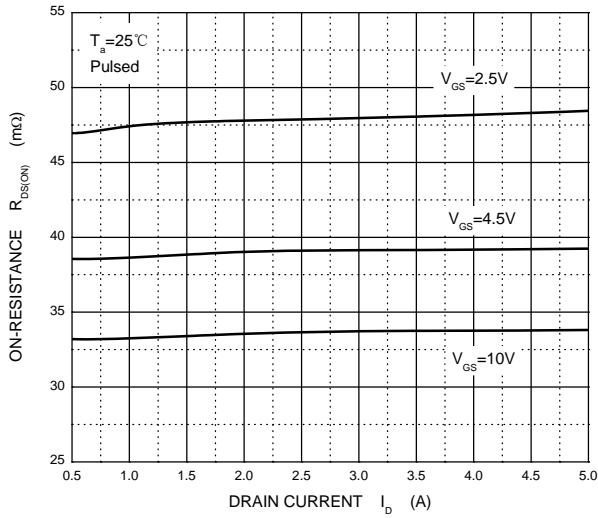
Output Characteristics



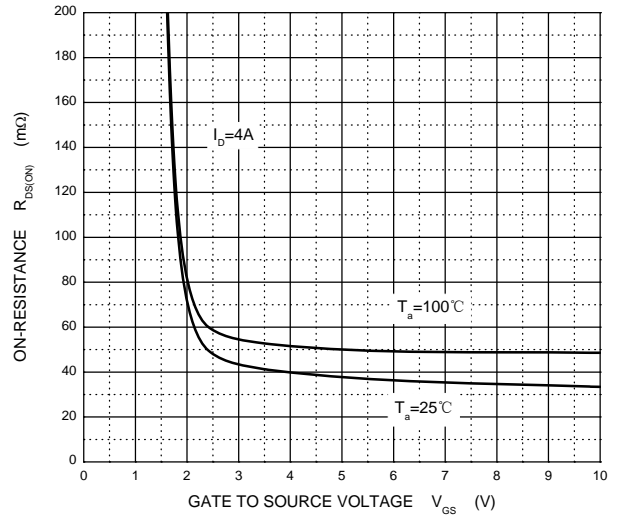
Transfer Characteristics



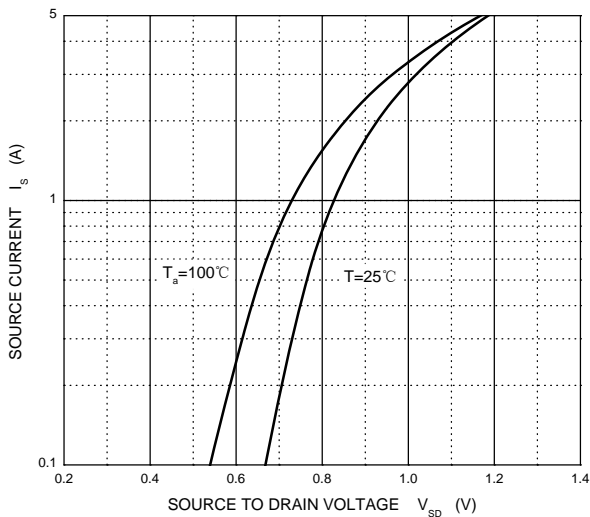
$R_{DS(ON)}$ — I_D



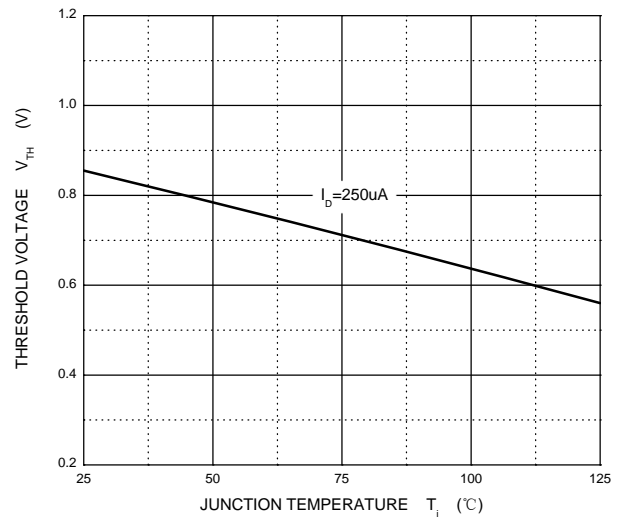
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



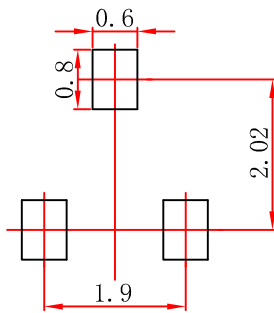
Threshold Voltage





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

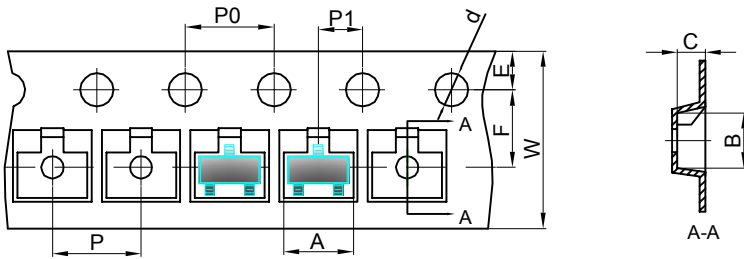
SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05 mm.
 3. The pad layout is for reference purposes only.

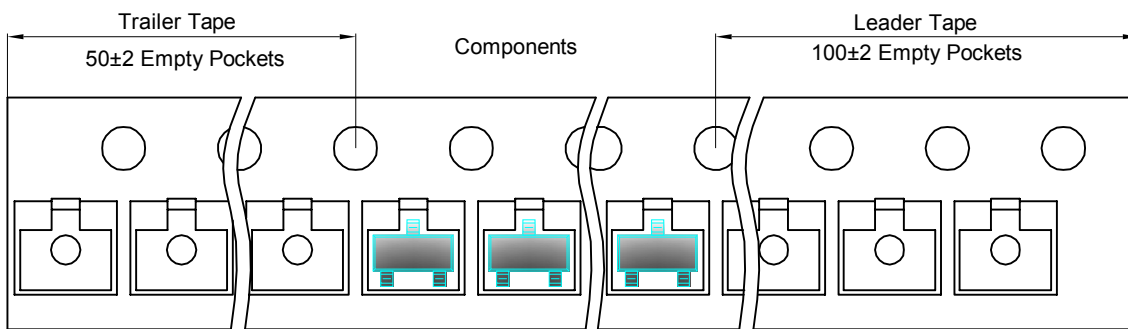
SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

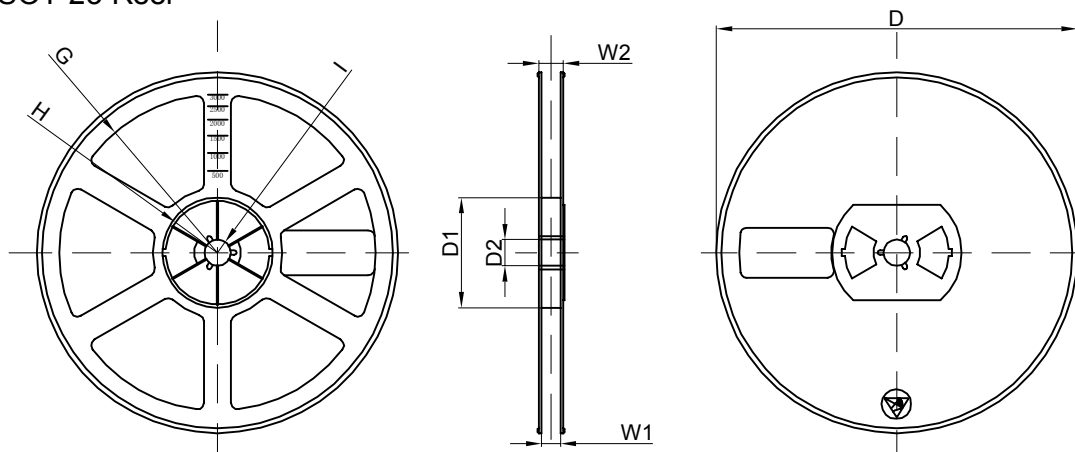


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box				
3000 pcs	7 inch	3000 pcs				